DOCUMENT RESUME

ED 455 754 HE 034 228

AUTHOR	Pena, Dely; Maitland, Christine
TITLE	Distance Education at Postsecondary Education Institutions: 1997-98.
INSTITUTION	National Education Association, Washington, DC. Higher Education Research Center.
PUB DATE	2000-04-00
NOTE	8p.; Theme issue.
AVAILABLE FROM	For full text: http://www.nea.org/he/heupdate/vol6no2.pdf.
PUB TYPE	Collected Works - Serials (022) -- Reports - Descriptive (141)
JOURNAL CIT	NEA Higher Education Research Center Update; v6 n2 Apr 2000
EDRS PRICE	MF01/PC01 Plus Postage.
DESCRIPTORS	Computer Mediated Communication; *Distance Education; Educational Trends; *Enrollment; *Higher Education; National Surveys; Telecourses; Tuition

ABSTRACT

This report presents findings from the second nationally representative survey of distance education undertaken by the National Center for Education Statistics. The survey, released in December 1999, collected information about the 1997-1998 academic year. The report also presents new information about fields of study and instructional levels of courses and programs offered through distance education and about trends in higher education. Distance education is more likely to be conducted by public institutions, with 78% of public 4-year and 62% of public 2-year institutions offering distance education courses. The survey indicated that there were an estimated 1,661,100 enrollees in all college-level distance education in the United States. An estimated 25,730 distance education courses were offered by 2-year and 4-year institutions, representing 34% of all institutions. Eight percent of all 2-year and 4-year institutions offered college-level degree or certificate programs that were designed to be completed totally through distance education. In 1997-1998, the technologies used by most distance education providers were Internet courses using asynchronous computer-based instruction, two-way interactive video, and one-way prerecorded video. About three-quarters of institutions charged the same tuition for distance education courses as for comparable on-campus courses. Distance education appears to have become a common feature of many postsecondary education institutions, and it is likely to become more common in the future. (SLD)

ED 455 754

NEA Higher Education

RESEARCH CENTER

VOLUME 6 • NUMBER 2 • APRIL 2000

Update

Distance Education at Postsecondary Education Institutions: 1997-98

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VOLUME 6 • NUMBER 2 • APRIL 2000

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INTRODUCTION

Many see the rise in the availability of technology-supported distance education—that is, the delivery of instruction over a distance to individuals located in one or more venues—not only as a revolutionary opportunity to increase access to postsecondary education, but also as an opportunity to hasten the overall pace of reform in higher education.

This report presents findings from the second nationally representative survey of distance education undertaken by the National Center for Education Statistics (NCES). The survey, released December 1999, collected information about the 12-month 1997–98 academic year.*

This report also presents new information about fields of study and instructional levels of courses and programs offered through distance education; and provides trend information for higher education institutions, including changes in the percentage of higher education institutions offering distance education courses, enrollments and course offerings, degree and certificate programs, as well as technologies used to deliver distance education courses.

*U.S. Department of Education, National Center for Education Statistics. *Distance Education at Postsecondary Education Institutions: 1997-98*. NCES 2000-013, by Laurie Lewis, Kyle Snow, Elizabeth Farris, Douglas Levin. Bernie Greene, project officer. Washington, DC: 1999. http://nces.ed.gov. This issue of *Update* is excerpted from the final report.

WHY MIGHT INSTITUTIONS IMPLEMENT DISTANCE EDUCATION?

Several forces are at work in what some have characterized as the "current rush" to implement distance learning programs by colleges and universities, including the convergence of communication and computing technologies, the changing demographics of students pursuing postsecondary education, and the need to reduce

Table 1

Number and percentage distribution of 2-year and 4-year postsecondary education institutions that offered distance education courses in 1997–98, that planned to offer them in the next 3 years, and that did not offer and did not plan to offer them in the next 3 years, by institutional characteristics

Institutional characteristic	Total number of institutions	Offered distance education in 1997-98		Planned to offer distance education in the next 3 years		Did not offer in 1997-98 and did not plan to offer in the next 3 years	
		Number	Percent	Number	Percent	Number	Percent
All institutions	5,010	1,680	34	990	20	2,340	47
Institutional type							
Public 2-year	1,230	760	62	250	20	230	18
Private 2-year	1,120	60	5	220	20	840	75
Public 4-year	610	480	78	70	12	60	10
Private 4-year	2,050	390	19	450	22	1,210	59
Size of institution							
Less than 3,000	3,800	730	19	840	22	2,230	59
3,000 to 9,999	820	610	75	110	14	90	12
10,000 or more	400	350	87	30	8	20	5

NOTE: Percentages are based on the estimated 5,010 2-year and 4-year postsecondary education institutions in the nation. Percentages are computed across each row. Details may not sum to totals because of rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Postsecondary Education Quick Information System, Survey on Distance Education at Postsecondary Education Institutions, 1998-1999

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the cost of education (Sherron and Boettcher 1997). It has been suggested that the primary benefits of implementing distance education programs for postsecondary institutions include the potential to increase enrollments of nontraditional students and to reduce program costs (Willis 1995).

INSTITUTIONS OFFERING DISTANCE EDUCATION COURSES

Distance education was more likely to be conducted by public institutions; 78 percent of public 4-year and 62 percent of public 2-year institutions offered distance education courses, compared with 19 percent of private 4-year and 5 percent of private 2-year institutions. Distance education was also strongly related to institutional size, with most large (87 percent) and medium-sized (75 percent) institutions offering distance education in 1997–98, compared with 19 percent of small institutions. (Table 1)

OVERALL ENROLLMENT IN DISTANCE EDUCATION COURSES

Institutions that offered any distance education courses were asked about the total enrollment in all distance education courses in 1997–98 (including enrollments in courses designed for all types of students), and the enrollment in college-level, credit-granting distance education courses in 1997–98, both overall and by the level of the course. If a student was enrolled in multiple courses, institutions were instructed to count the student for each course in which he or she was enrolled. Thus, enrollments may include duplicated counts of students.

The survey indicates that there were an estimated 1,661,100 enrollments in all distance education courses offered by 2-year and 4-year postsecondary institutions in 1997–98. There were an estimated 1,363,670 enrollments in college-level, credit-granting distance education courses in 1997–98, with most of these (1,082,380) at the undergraduate level. The remaining enrollments (281,300) were at the graduate/first-professional level. To put these numbers into context, the National Center for Education Statistics (NCES) estimates that there were 14.6 million students enrolled in 2-year and 4-year postsecondary education institutions in fall 1996 (the most recent year for which information is available), with an estimated 12.5 million students enrolled at the undergraduate level, and an estimated 2.1 million students enrolled at the graduate/first-professional level (unpublished tabulations from the 1996 IPEDS "Fall Enrollment" file).

Consistent with the distributions of the percentage of institutions that offered distance education courses, most of the enrollments in distance education courses were at public 2-year and public 4-year institutions. In addition, the number of enrollments in college-level, credit-granting distance education courses was considerably higher at public 2-year institutions than at public 4-year institutions.

NUMBER OF DISTANCE EDUCATION COURSES OFFERED

In the 1994–95 academic year, an estimated 25,730 distance education courses with different catalog numbers were offered by 2-year and 4-year higher education institutions. By 1997–98, the number of courses had grown to 47,540 different college-level, credit-granting distance education courses, and 52,270 different distance education courses for any level or audience. Thus, the number of distance education courses offered was approximately double in 1997–98 what it was in 1994–95. Public 2-year, public 4-year, and private 4-year institutions all experienced this rapid growth in the number of distance education courses offered.

An estimated 54,470 different distance education courses were offered in the 12-month 1997–98 academic year by 2-year and 4-year postsecondary education institutions. An estimated 49,690 different college-level, credit-granting distance education courses were offered in 1997–98, with most of those (35,550) at the undergraduate level. The remaining credit-granting courses (14,140) were at the graduate/first-professional level.

The two fields in which more institutions that offered distance education courses offered college-level credit-granting distance education courses were the general field of English, humanities, and the social and behavioral sciences (70 percent of institutions) and the field of business and management (55 percent of institutions).

Public 2-year institutions were more likely than public 4-year institutions, which in turn were more likely than private 4-year institutions, to offer for-credit distance education courses in English, humanities, and the social and behavioral sciences, physical and biological/life sciences, mathematics, computer science, and vocational/technical fields (Table 2). Public 4-year institutions were more likely than either public 2-year or private 4-year institutions to offer for-credit distance education courses in the health professions, education, engineering, agriculture and natural resources, and library and information sciences. For-credit distance education courses in business and management were about equally likely to be offered at public 2-year and 4-year institutions, which were both more likely to offer them than private 4-year institutions. Private 4-year institutions were more likely than either public 2-year or public 4-year institutions to offer for-credit distance education courses in the

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Table 2

Percent of all 2-year and 4-year postsecondary education institutions offering any distance education courses in 1997-98 that offered college-level, credit-granting distance education courses in various fields of study in 1997-98, by institutional type and field

Field	Institution type*			
	All institutions	Public 2-year	Public 4-year	Private 4-year
English, humanities, social and behavioral sciences	70	85	73	40
Business and management	55	62	61	36
Health professions	36	36	50	19
Physical and biological/life sciences	33	45	35	11
Mathematics	32	46	28	13
Education	29	14	61	22
Computer science	26	33	25	14
Vocational/technical fields	17	29	12	1
Engineering	12	5	29	8
Agriculture and natural resources	7	7	14	0
Library and information sciences	6	4	13	1
Other fields	16	12	12	30

*Data for private 2-year institutions are not reported as a separate type of institution because too few of them in the sample offered distance education courses in 1997–98 to make reliable estimates. Data for private 2-year institutions are included in the totals.

NOTE: Percentages are based on the estimated 1,680 institutions that offered any distance education courses in 1997–98. Zeros appear in the table when no institution in the sample gave the indicated response.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Postsecondary Education Quick Information System, Survey on Distance Education at Postsecondary Education Institutions, 1998–1999.

"other fields" category. A large portion of the courses shown in the "other fields" category consists of courses in biblical and theological studies offered by religiously affiliated colleges and seminaries.

DEGREE AND CERTIFICATE PROGRAMS

While taking individual courses through distance education has the potential to increase access to postsecondary education among those who traditionally have not had access, it is the possibility of completing degree and certificate programs solely through distance education that offers the potential for the most dramatic changes in access and opportunity. This report presents information about the prevalence of distance education degree and certificate programs in all postsecondary institutions by institutional type, level of the degree and certificate programs, and general field of study.

Eight percent of all 2-year and 4-year postsecondary institutions offered college-level degree or certificate programs that were designed to be completed totally through distance education. Among the 34 percent of institutions that offered any distance education courses in 1997–98, 25 percent offered distance education degrees or certificates. Among all postsecondary institutions, public 4-year institutions were more likely than other types of institutions to offer distance education degree and certificate programs .

In 1997–98, 2-year and 4-year postsecondary institutions offered an estimated 1,230 distance education degree programs and 340 distance education certificate programs. Postsecondary institutions offering distance education programs were more likely to offer graduate/first-professional degrees or certificates than undergraduate degrees or certificates. Graduate/first-professional degree programs were most likely to be offered in business and management, the health professions, education, and engineering.

DISTANCE EDUCATION TECHNOLOGIES

In 1995, more institutions used two-way interactive video (57 percent) and one-way prerecorded video (52 percent) than any of the other technologies. In 1997–98, the technologies used by more institutions than any of the other technologies were Internet courses using asynchronous computer-based instruction (60 percent), two-way interactive video (56 percent), and one-way prerecorded video (48 percent).

Thus, the percentages of institutions using two-way interactive video and one-way prerecorded video were comparable in the two years. However, the percentage of institutions offering Internet courses using asynchronous computer-based instruction grew substantially from 1995 to 1997–98, from 22 percent to 60 percent. The percentage of institutions that offered Internet courses using synchronous computer-based instruction grew slightly, from 14 percent

in 1995 to 19 percent in 1997–98. In general, use of the remaining technologies decreased slightly from 1995 to 1997–98.

More institutions used asynchronous Internet instruction (58 percent of institutions), two-way interactive video (54 percent), and one-way prerecorded video (47 percent) than used any of the other technologies as a primary mode of instructional delivery for distance education courses. Nineteen percent of the institutions offered courses using synchronous Internet instruction and 14 percent used one-way video with two-way audio. Eight percent or fewer of the institutions used each of the other technologies as a primary instructional mode. Differences in the use of the technologies may vary by institutional type due to factors such as the differing costs and resources required for various technologies, the kinds of students that are targeted by the different types of institutions, and the different kinds of courses that are offered by the institutions. (see Table 3)

TUITION AND FEES

Institutions were asked how the tuition charged for college-level, credit-granting distance education courses compared with tuition charged for equivalent on-campus courses. About three-quarters (77 percent) of the institutions charged the same tuition for distance education courses as for comparable on-campus courses.

Public 2-year institutions were more likely than public or private 4-year institutions to indicate that tuition charges were always the same for distance education and on-campus courses, with 90 percent of public 2-year institutions that offered distance education courses giving this response Variable tuition charges were more common among public 4-year institutions offering distance education courses than at other types of institutions, although still a minority at 28 percent of public 4-year institutions.

Another approach that institutions may use to offset the cost of distance education is the application of special fees to distance education courses that are not added to on-campus courses. These fees may be determined by factors such as delivery format or location. Two-thirds (66 percent) of the institutions that offered distance education courses indicated that they did not add special fees to their college-level, credit-granting distance education courses, 21 percent sometimes added special fees, and 13 percent always added special fees.

CHANGES IN DISTANCE EDUCATION SINCE 1994–95

While this report primarily presents findings on various aspects of distance education for all postsecondary institutions for 1997–98, an analysis of the data for the subset of higher education institutions allows trend comparisons with the previous NCES report on distance education. Changes in distance education since 1994–95 are presented in this report in terms of the

Table 3

Percent of 2-year and 4-year postsecondary education institutions offering distance education courses in 1997-98 indicating that the institution used various types of technology as a primary mode of instructional delivery for distance education courses in 1997-98, by institutional characteristics

Institutional characteristic	Two-way video with two-way audio (two-way interactive video)	One-way video with two-way audio	One-way live video	One-way pre-recorded video	Two-way audio transmission	One-way audio transmission	Internet courses using synchronous computer-based instruction	Internet courses using asynchronous computer-based instruction	CD-ROM	Multimode packages	Other technologies
All institutions	54	14	6	47	6	6	19	58	7	8	2
Institutional type*											
Public 2-year	53	15	7	62	4	4	16	57	7	7	1
Public 4-year	80	22	9	44	7	5	22	58	8	12	2
Private 4-year	29	3	0	26	8	13	19	61	4	4	2
Size of institution											
Less than 3,000	45	9	3	29	7	8	15	51	5	3	2
3,000 to 9,999	57	13	6	56	4	3	19	59	7	10	1
10,000 or more	66	26	12	68	6	9	26	69	10	14	4

*Data for private 2-year institutions are not reported as a separate type of institution because too few of them in the sample offered distance education courses in 1997–98 to make reliable estimates. Data for private 2-year institutions are included in the totals and in analyses by other institutional characteristics.

NOTE: Percentages are based on the estimated 1,680 institutions that offered any distance education courses in 1997–98. Percentages sum to more than 100 because institutions could use different types of technologies as primary modes of instructional delivery for different distance education courses. Zeros appear in the table when no institution in the sample gave the indicated response.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Postsecondary Education Quick Information System, Survey on Distance Education at Postsecondary Education Institutions, 1998–1999.

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percentage of institutions offering distance education courses, the number of distance education courses offered, the number of enrollments in distance education courses, the availability of distance education degree and certificate programs, and the technologies used to deliver distance education courses. Findings indicate that:

Between fall 1995 and 1997–98, the percentage of higher education institutions offering distance education courses increased by about one-third, from 33 percent to 44 percent. From 1994–95 to 1997–98, the number of course offerings and enrollments in distance education approximately doubled. And, although the percentages of institutions offering distance education degree and certificate programs were essentially the same in 1997–98 as in 1995, the number of degree and certificate programs that were offered nearly doubled. Taken together, these findings suggest that the expansion in distance education appears to be among institutions that have offered distance education for the past 3 years. These institutions have substantially increased the number of distance education courses, enrollments, and degree and certificate programs that they offer.

Among all higher education institutions offering any distance education, the percentages of institutions using two-way interactive video and one-way prerecorded video were essentially the same in 1997–98 as in 1995. The percentage of institutions using asynchronous Internet-based technologies, however, nearly tripled, from 22 percent of institutions in 1995 to 60 percent of institutions in 1997–98. (see Table 4)

CONCLUSIONS

In the most general terms, distance education appears to have become a common feature of many postsecondary education institutions and that, by their own accounts, it will become more common in the future. Public institutions were also found to be more likely to offer distance education courses than private institutions. While institutions employed a wide variety of technologies to deliver distance education, more institutions were likely to employ several types of video and the Internet-based technologies than any other modes of delivery included in the survey. There were an estimated 1,661,100 enrollments in distance education courses during 1997–98. The vast majority of these enrollments were in college-level, credit-granting courses, mostly at the undergraduate level. Institutions offered an estimated 54,470 different distance education courses in 1997–98. The largest number of courses were in English, humanities, and the social and behavioral sciences, and in business and management. The majority of postsecondary institutions charged

Table 4

Percent of 2-year and 4-year higher education institutions offering distance education courses that used selected types of technologies to deliver distance education courses in 1995 and 1997-98, by institutional type

Technology	1995[1]			1997-98[2]		
	Institution type[3]			Institution type[3]		
	Public 2-year	Public 4-year	Private 4-year	Public 2-year	Public 4-year	Private 4-year
Two-way video with two-way audio (two-way interactive video)	49	78	40	53	80	31
One-way video with two-way audio	18	36	14	14	22	3
One-way prerecorded video	67	42	30	64	44	23
Internet courses using synchronous computer-based instruction	(†)	(†)	(†)	16	22	21
Internet courses using asynchronous computer-based instruction	(†)	(†)	(†)	59	58	66
Two-way online (computer-based) interactions during instruction	8	17	25	(†)	(†)	(†)
Other computer-based technology (e.g., Internet)	14	26	38	(†)	(†)	(†)

†Statistic not estimated for that year.

[1] Based on the estimated 1,130 higher education institutions that offered distance education courses in fall 1995. The data for the 1995 study were not imputed for item nonresponse. However, there was no item nonresponse for these technology items.

[2] Based on the estimated 1,590 higher education institutions that offered any distance education courses in 1997–98.

[3] Data for private 2-year institutions are not reported as a separate type of institution because too few of them in the sample offered distance education courses to make reliable estimates.

SOURCES: U.S. Department of Education, National Center for Education Statistics, Postsecondary Education Quick Information System, Survey on Distance Education Courses Offered by Higher Education Institutions, 1995, and Survey on Distance Education at Postsecondary Education Institutions, 1998–1999.

students the same tuition and fees for distance education courses as they did for traditional on-campus courses.

While these findings will help to inform stakeholders—including individuals considering a postsecondary education, faculty and administrators at postsecondary institutions, providers of technologies used for distance education, and policymakers at federal, state, and local levels—they do not address many of the pertinent questions about distance education. These questions include issues related to:

- equity of access to postsecondary education;
- the costs of developing and implementing distance education programs;
- accreditation of and quality assurance in distance education programs;
- copyright and intellectual property rights;
- changes in the role of postsecondary faculty and challenges facing them as a result; and
- pressures on existing organizational structures and arrangements.

Given rapidly evolving societal and institutional trends brought about by changes in technology (e.g., Carnevale 1991; Kelly 1998; Sherron and Boettcher 1997), research on distance education will continue to face fundamental challenges. These challenges include evolving conceptions and definitions of distance education and the rise of nontraditional arrangements of postsecondary education institutions and programs, including the rise of virtual universities. Other basic challenges facing those conducting research on distance education include the need to respond to the information needs of stakeholders in a timely manner. In this ever-changing environment, anecdotal data often must suffice until more comprehensive studies can be conducted—studies that remain relevant for only brief periods. It is a dynamic time for postsecondary education institutions facing the opportunities and challenges brought by technological innovation. As Gladieux and Swail (1999) assert, given the fact that computer and related technologies are evolving so quickly—and new providers and brokers of higher education proliferating so rapidly—no one knows how traditional higher education will change.

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Office of Higher Education
1201 Sixteenth Street N.W.
Washington, D.C. 20036
202-822-7100
E-mail: Highered@NEA.org

Higher Education Staff
Christine Maitland — Rachel Hendrickson
Dely Pena — Deborah Mitchell
Cathie Sheffield-Thompson

This issue prepared by Dely Pena and Christine Maitland.

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